**THAT WHICH IS CLAIMED IS:**

1. A desulfurization process comprising the steps of:

(a) contacting a solid particulate system with a hydrocarbon-containing fluid stream in a desulfurization zone under desulfurization conditions, wherein said solid particulate system comprises a sorbent and a catalyst, wherein said sorbent is capable of removing sulfur from said hydrocarbon-containing fluid stream at said desulfurization conditions, wherein said catalyst is capable of increasing the octane of said hydrocarbon-containing fluid stream at said desulfurization conditions;

(b) contacting said solid particulate system with an oxygen-containing regeneration stream in a regeneration zone under regeneration conditions; and

(c) contacting said solid particulate system with a hydrogen-containing reducing stream in a reducing zone under reducing conditions.

2. The desulfurization process of claim 1, wherein said catalyst comprises a zeolite, wherein the largest ring of said zeolite has at least 8 T-atoms.

3. The desulfurization process of claim 2, wherein the largest ring of said zeolite has at least 10 T-atoms.

4. The desulfurization process of claim 3, wherein said catalyst is capable of catalyzing isomerization of said hydrocarbon-containing fluid stream at said desulfurization conditions.

5. The desulfurization process of claim 4, wherein said catalyst is capable of catalyzing cracking of said hydrocarbon-containing fluid stream at said desulfurization conditions.

6. The desulfurization process of claim 5, wherein step (b) includes removing sulfur from said sorbent and removing coke from said catalyst.

7. The desulfurization process of claim 3, wherein said sorbent comprises zinc oxide and a promoter metal.

8. The desulfurization process of claim 7, wherein step (a) includes converting at least a portion of said zinc oxide to zinc sulfide.

9. The desulfurization process of claim 8, wherein step (b) includes converting at least a portion of said zinc sulfide back to zinc oxide, wherein step (b) includes oxidizing at least a portion of said promoter metal, wherein step (c) includes reducing at least a portion of the oxidized promoter metal.

10. The desulfurization process of claim 7, wherein said promoter metal is selected from the group consisting of nickel, cobalt, iron, manganese, tungsten, silver, gold, copper, platinum, zinc, ruthenium, molybdenum, antimony, vanadium, iridium, chromium, and palladium.

11. The desulfurization process of claim 7, wherein said promoter metal is nickel.

12. The desulfurization process of claim 7, wherein said sorbent further comprises an aluminate.

13. The desulfurization process of claim 7, wherein said sorbent further comprises perlite.

14. The desulfurization process of claim 2, wherein the largest ring of said zeolite has 10 to 12 T-atoms.

15. The desulfurization process of claim 14, wherein said zeolite has a channel dimensionality of 3.

16. The desulfurization process of claim 14, wherein said catalyst comprises said zeolite in an amount in the range of from about 5 to about 50 weight percent.

17. The desulfurization process of claim 14, wherein said zeolite has a silica-alumina ratio in the range of from about 20 to about 1,000.

18. The desulfurization process of claim 14, wherein said sorbent comprises zinc oxide and a promoter metal.

19. The desulfurization process of claim 18, wherein said sorbent comprises said zinc oxide in an amount in the range of from about 20 to about 60 weight percent.

20. The desulfurization process of claim 18, wherein said promoter metal is present as a substitutional solid metal solution with zinc.

21. The desulfurization process of claim 20, wherein said sorbent comprises said substitutional solid solution in an amount in the range of from about 20 to about 60 weight percent.

22. The desulfurization process of claim 2, wherein the largest ring of said zeolite has 10 T-atoms.

23. The desulfurization process of claim 22, wherein said zeolite has a silica-alumina ratio in the range of from 20 to 1000.

24. The desulfurization process of claim 22, wherein the weight ratio of said sorbent to said catalyst in said solid particulate system is in the range of from about 100:1 to about 4:1.

25. The desulfurization process of claim 2, wherein said zeolite has a MFI framework type code.

26. The desulfurization process of claim 2, wherein said zeolite is ZSM-5.

27. The desulfurization process of claim 26, wherein said ZSM-5 has been ion exchanged to thereby form H-ZSM-5.

28. The desulfurization process of claim 1, wherein the weight ratio of said sorbent to said catalyst in said solid particulate system is in the range of from about 40:1 to about 5:1.

29. The desulfurization process of claim 28, wherein said solid particulate system consists essentially of an unbound mixture of discrete particles of said sorbent and discrete particles of said catalyst.

30. The desulfurization process of claim 29, wherein said discrete particles of said sorbent and said discrete particles of said catalyst both have a mean particle size in the range of from about 20 to about 200 microns.

31. The desulfurization process of claim 29, wherein said discrete particles of said sorbent and said discrete particles of said catalyst both have a Group A Geldart characterization.

32. The desulfurization process of claim 1, wherein steps (a), (b), and (c) are performed simultaneously in separate desulfurization, regeneration, and reducing zones.

33. The desulfurization process of claim 1, wherein said desulfurization conditions include a desulfurization temperature in the range of from about 500°F to about 1,000°F, wherein said regeneration conditions include a regeneration temperature in the range of from about 700°F to about 1,200°F, and wherein said reducing conditions include a reducing temperature in the range of from about 600°F to about 1,000°F.

34. The desulfurization process of claim 33, wherein said desulfurization temperature is in the range of from 700°F to 850°F.

35. The desulfurization process of claim 1, wherein said hydrocarbon-containing fluid stream is selected from the group consisting of cracked gasoline, gasoline, diesel fuel, and mixtures thereof, wherein said oxygen-containing regeneration stream comprises in the range of from about 1 to about 50 mole percent oxygen, and wherein said hydrogen-containing reducing stream comprises at least about 50 mole percent hydrogen.

36. The desulfurization process of claim 1, wherein said hydrocarbon-containing fluid stream is cracked gasoline.

37. The desulfurization process of claim 1, wherein step (a) includes passing said hydrocarbon-containing fluid stream through a first fluidized bed of said solid particulate system, wherein step (b) includes passing said oxygen-containing regeneration stream through a second fluidized bed of said solid particulate system, wherein step (c) includes passing said hydrogen-containing reducing stream through a third fluidized bed of said solid particulate system.

38. A desulfurization process comprising the steps of:

(a) contacting a first portion of a solid particulate system with a hydrocarbon-containing fluid stream in a first fluidized bed reactor under desulfurization conditions sufficient to remove sulfur from said hydrocarbon-containing fluid stream, wherein said solid particulate system comprises a plurality of discrete sorbent particles and a plurality of discrete catalyst particles, wherein each of said sorbent particles comprises zinc oxide and a promoter metal component, wherein each of said catalyst particles comprises a zeolite capable of catalyzing isomerization and cracking of said hydrocarbon-containing fluid stream at said desulfurization conditions, wherein the weight ratio of said sorbent particles to said catalyst particles is in the range of from about 100:1 to about 4:1; and

(b) simultaneously with step (a), contacting a second portion of said solid particulate system with an oxygen-containing regeneration stream in a second fluidized bed reactor under regeneration conditions sufficient to

remove coke from said catalyst particles, remove sulfur from said sorbent particles, and provide an oxidized promoter metal component.

39. The desulfurization process of claim 38, wherein said hydrocarbon-containing fluid stream is cracked gasoline.

40. The desulfurization process of claim 38, wherein said desulfurization conditions include a desulfurization temperature in the range of from 700°F to 850°F.

41. The desulfurization process of claim 40, wherein said regeneration conditions include a regeneration temperature in the range of from 900°F to 1,100°F.

42. The desulfurization process of claim 38, wherein the largest ring of said zeolite has at least 10 T-atoms.

43. The desulfurization process of claim 42, wherein said zeolite has a silica-alumina ratio greater than about 20.

44. The desulfurization process of claim 43, wherein said zeolite has a MFI framework type code.

45. The desulfurization process of claim 38, wherein said promoter metal component is a substitutional solid metal solution characterized by the formula $M_AZn_B$, wherein M is a promoter metal and A and B are numerical values in the range of from 0.01 to 0.99.

46. The desulfurization process of claim 45, wherein step (b) includes converting at least a portion of said substitutional solid metal solution to said

oxidized promoter metal component, and wherein said oxidized promoter metal component comprises a substitutional solid metal oxide solution characterized by the formula $M_XZn_YO$, wherein M is said promoter metal and X and Y are numerical values in the range of from 0.01 to 0.99.

47. The desulfurization process of claim 46, wherein M is selected from the group consisting of nickel, cobalt, iron, manganese, tungsten, silver, gold, copper, platinum, zinc, ruthenium, molybdenum, antimony, vanadium, iridium, chromium, and palladium, A is in the range of from 0.7 to 0.97, B is in the range of from 0.03 to 0.3, X is in the range of from 0.5 to 0.9, and Y is in the range of from 0.1 to 0.5.

48. The desulfurization process of claim 46, wherein M is nickel, A is in the range of from 0.85 to 0.95, B is in the range of from 0.5 to 0.15, X is in the range of from 0.6 to 0.8, and Y is in the range of from 0.2 to 0.4.

49. The desulfurization process of claim 38, further comprising the step of:

(c) simultaneously with step (b), contacting a third portion of said solid particulate system with a hydrogen-containing reducing stream in a third fluidized bed reactor under reducing conditions sufficient to reduce said oxidized promoter metal component.

50. A solid particulate system comprising an unbound mixture of discrete sorbent particles and discrete catalyst particles, wherein said sorbent particles comprise zinc oxide and a promoter metal component, wherein said catalyst particles

comprise a zeolite having a largest ring with at least 10 T-atoms, wherein the weight ratio of said sorbent particles to said catalyst particles is in the range of from about 100:1 to about 4:1, wherein the mean particle sizes of said sorbent particles and said catalyst particles are both in the range of from about 20 to about 200 microns.

51. The solid particulate system of claim 50, wherein said solid particulate system consists essentially of said sorbent particles and said catalyst particles.

52. The solid particulate system of claim 50, wherein said catalyst particles have an average particle density that is within 50 percent of the average particle density of the sorbent particles.

53. The solid particulate system of claim 50, wherein said sorbent particles and catalyst particles both have a Group A Geldart characterization.

54. The solid particulate system of claim 50, wherein said sorbent particles and catalyst particles both have a Jet Cup Attrition Index value of less than about 20.

55. The solid particulate system of claim 50, wherein the weight ratio of said sorbent particles to said catalyst particles is in the range of from about 40:1 to about 5:1.

56. The solid particulate system of claim 50, wherein the weight ratio of said sorbent particles to said catalyst particles is in the range of from about 20:1 to about 10:1.

57. The solid particulate system of claim 50, wherein said zeolite has a framework type code selected from the group consisting of AFS, AFY, BEA, BEC, BHP, CGS, CLO, CON, DFO, EMT, FAU, GME, ISV, MEI, MEL, MFI, SAO, SBS, SBT, and WEN.

58. The solid particulate system of claim 57, wherein said zeolite has a silica-alumina ratio in the range of from about 20 to about 1000.

59. The solid particulate system of claim 50, wherein said zeolite has a MFI framework type code.

60. The solid particulate system of claim 50, wherein said promoter metal component comprises a promoter metal selected from the group consisting of nickel, cobalt, iron, manganese, tungsten, silver, gold, copper, platinum, zinc, ruthenium, molybdenum, antimony, vanadium, iridium, chromium, and palladium.

61. The solid particulate system of claim 60, wherein said promoter metal component is a substitutional solid metal solution characterized by the formula $M_AZn_B$, wherein M is said promoter metal and A and B are numerical values in the range of from 0.01 to 0.99.

62. The solid particulate system of claim 61, wherein A is in the range of from 0.1 to 0.97 and B is in the range of from 0.03 to 0.3.

63. The solid particulate system of claim 62, wherein said promoter metal is nickel, A is in the range of from 0.85 to 0.95, and B is in the range of from 0.5 to 0.15.

64. The solid particulate system of claim 50, wherein said sorbent particles comprise zinc oxide in an amount in the range of from about 20 to about 60 weight percent and said promoter metal component in an amount in the range of from about 20 to about 60 weight percent.

65. The solid particulate system of claim 50, wherein said catalyst particles comprise said zeolite in an amount in the range of from about 5 to about 50 weight percent.